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SOURCE Transport Nefti i Gaza, by V. A. Pritula, Gostoptekhnizdat, Moscow, 1948.

GAS AND PETROLEUM TRANSPORTATION IN THE USSR

Petroleum Transport

Combinations of different types of transport are used to carry petroleum from the producer to the consumer. However, only one type of transport is used to carry the petroleum 80-90 percent of the entire route.

For example, in the hauling of petroleum from oil wells in the Groznyy region to consumers of tractor kerosene, petroleum is shipped from gauging tanks to field tanks through a gathering network of pipes. From there it is shipped 10-20 kilometers to refineries through local trunk pipelines. Next, kerosene is pumped via a 10-inch pipeline from the refinery at Groznyy to Konokovo and then via 12-inch pipeline from Konokovo through Armavir to Trudovaya, a distance of nearly 900 kilometers. At Trudovaya the kerosene is loaded into railroad tank cars which haul the kerosene to regional bases in Dnepropetrovsk, Lozovaya, Khar'kov, etc., a distance of nearly 200 kilometers. From these petroleum bases, the kerosene is hauled 20-30 kilometers by motor transport to MTS, where it is used as tractor fuel. In the above example, the main form of transport used is pipeline, which carried the kerosene 85 percent of the total distance.

Another example is the shipment of automobile gasoline from Baku to Moscow Oblast. Petroleum is shipped through a gathering network of pipes to field tanks and from there through local pipelines to bases on the sea. At these bases, the gasoline is loaded into sea-going tankers destined for Astrakhan', where it is reloaded first into barges at anchor and then into river barges. The river barges are towed up the Volga to Gor'kiy and from there the gasoline is shipped by railroad to local petroleum product bases or refineries. Finally, the petroleum products are carried to the consumer in containers hauled by truck or by special tank trucks. In this example, the petroleum was carried 85 percent of the entire distance from producer to consumer by water transport.

- 1 -

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Pipelines

The first USSR pipeline, completed in 1906, carried kerosene in an 8-inch pipe from Baku to Batumi, a distance of 883 kilometers. A little later, an 8-inch oil pipeline, 108 kilometers long, was laid between Maykop and Krasnodar. Next, an 8-inch pipeline, 162 kilometers long, was laid between Grozny and Makhachkala to transport Grozny petroleum to interior markets. Later, these pipes carried Baku petroleum to Grozny refineries. The 8-inch oil pipeline from Baku to Batumi and part of the pipeline from Grozny to Tuapse are put together with threaded pipe.

In the USSR, trunk pipelines have a diameter of not less than 10 inches and frequently as much as 12 inches.

The first trunk pipeline in the USSR was laid in 1926 - 1928. This 10-inch pipeline carried petroleum from Grozny to the Tuapse refineries, and from there the petroleum products were shipped by sea to supply the Ukraine. In 1928 - 1929 a 10-inch oil pipeline was laid between Baku and Batumi to supply petroleum to the Batumi refineries. Both pipelines gave outlet on the Black Sea.

In 1931 - 1932 a 12-inch kerosene pipeline was laid between Armavir and Trudovaya to supply Ukrainian agriculture with tractor fuel. In 1932 - 1936, a 12-inch oil pipeline was laid between Kaspil and Orsk in order to supply, in addition to many feeder lines, petroleum to the Orsk refineries. In 1935 - 1936, a parallel 12-inch pipeline was laid between Makhachkala and Grozny to assure complete transportation for petroleum products of the Grozny oil refineries. Also in 1936, an oil pipeline was laid between Ishimbayevo and Ufa to supply petroleum to the Ufa refineries. This was the first trunk pipeline in the "Second Baku." In 1940, a 10-inch oil pipeline was laid between Malgobek and Grozny to transport petroleum from the Malgobek deposits.

During World War II, the oil pipeline network in the USSR increased despite the destruction of many old lines, and over 1,500 kilometers of new pipelines for crude petroleum and petroleum product were laid. To supply Leningrad with fuel during the war, a pipeline was even laid under water across Lake Ladoga.

Pipelines for natural gas were introduced later than oil pipelines in the USSR. The first trunk gas pipeline was completed in 1940 between Izberbash and Makhachkala. This line, 10-inches in diameter, carries gas 65 kilometers to Makhachkala. During the war, a 160-kilometer gas pipeline was laid between Buguruslan and Kuybyshev. In 1945 - 1946, a 12-inch gas pipeline, more than 700 kilometers long, was laid between Saratov and Moscow to supply the capital with gas.

Principal Trunk Oil Pipelines

<u>Route</u>	<u>Year(s)</u> <u>Laid</u>	<u>Length</u> <u>(km)</u>	<u>Diameter</u> <u>(in)</u>	<u>Yearly</u> <u>Production</u> <u>(tons)</u>
Baku-Batumi	1896-1906	883	8	900,000
Makhachkala-Grozny	1913-1914	162	8	700,000
Tukha-Krasnodar	1910-1911	102	8	900,000

- 2 -

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<u>Route</u>	<u>Year(s) Laid</u>	<u>Length (km)</u>	<u>Diameter (in)</u>	<u>Yearly Production (tons)</u>
Kaluzhskaya-Arapskaya	1913	25	5	--
Shorsu-Pos'yetovka	--	30	4	--
Groznyy-Tuapse	1926-1928	644	10	1,600,000
Armavir-Trudovaya	1931-1932	455	12	1,500,000
Gur'yev-Orsk	1932-1936	709	12	1,200,000
Makhachkala-Groznyy	1935-1936	155	12	1,500,000
Kochagyl-Gur'yev-Orsk oil pipeline	1934	118	8-10	500,000
Ishimbayevo-Ufa	1936	166	12	1,150,000
Sakhalin oil pipeline	1932	29	6-10	--
Total		3,478	--	9,950,000
Trunk oil pipelines built after start of war		1,500	--	--

Trunk Gas Pipelines

Izberbash-Makhachkala	1940	65	10	--
Burguruslan-Kuybyshev	1943	160	10	--
Saratov-Moscow	1945	800	12	1,300,000 cu m per day
West Ukraine	--	240	--	--
Total		1,265	--	--

Total trunk pipelines: more than 6,000 kilometers.

Tank Trucks

Tank trucks are used primarily for hauling low-viscosity petroleum products, particularly various grades of gasoline. Tank trucks built specifically for hauling gasoline are called "avtobenzotzistern" (gasoline tank trucks) or ABTs. Gasoline tanks are mounted on the GAS-AA, ZIS-5, and YaG-4 truck chassis. The GAS-AA chassis carries a "trunk" type tank with a capacity of 1.5 cubic meters. The ZIS-5 chassis carries a 3-cubic-meter tank which is either trunk shaped or cylindrical, and the YaG-4 chassis carries a 6-cubic-meter oval-shaped tank.

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- 3 -

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